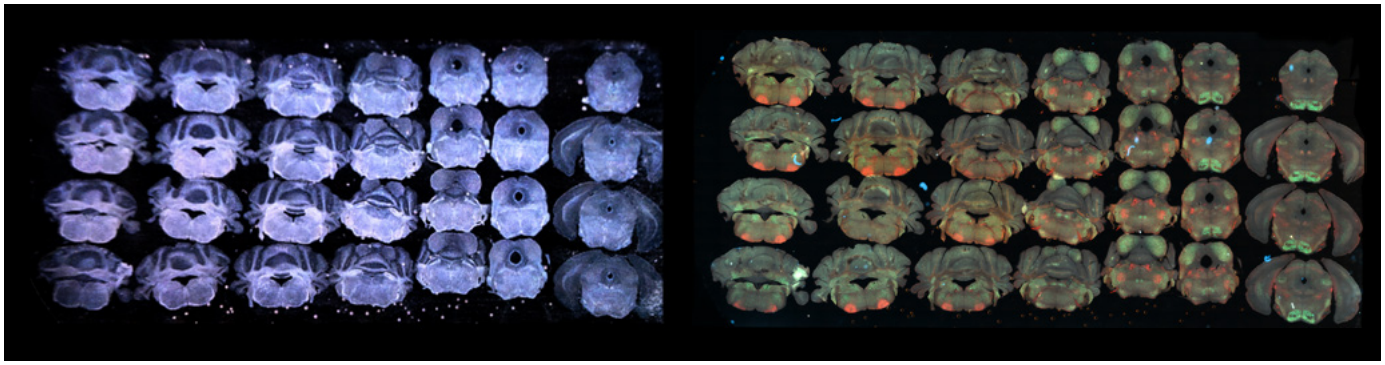
Automated Acquisition and Advanced Data Analyses

High-Throughput Screening & Automated Workflows with ZEISS Axio Observer *scan* and ZEISS Axio Imager *scan*



Darkfield Composite Contrast image (left) and fluorescence image (right) of brainstem 80 µm-thick sections. Labeling of excitatory neurons with GFP (nuclear), and signal amplification with anti-GFP and Alexa 488-conjugated secondary antibodies, counterstained with anti-ChAT (motor neurons) and Alexa 647-coupled secondary antibodies. Courtesy of Silvia Arber and Staci Thornton, FMI.

If you use manual imaging and analysis workflows, your research may suffer from biased selection and interpretation of data with low statistics, unsuccessful attempts to locate rare events, incomplete analyses, and inefficient time management.

Equip yourself with automated imaging acquisition tools and AI-powered software analyses to break through previous experimental barriers. Axio Observer scan and Axio Imager scan are designed to increase the efficiency of your large-scale data collection workflows. Selected hardware and software components create a streamlined process from acquisition to evaluation of relevant data for your research needs.

Scope of Application:

- Automatic multi-color imaging of large tissue sections
- High-throughput imaging of multi-well plates or slides
- Drug screenings or genetic screens

System Highlights:

AI Sample Finder

With the click of a button, let the microscope automatically find and focus your sample and generate an overview image at 5 – 10× faster speeds compared to a manual system start.

Smart data acquisition

Set up acquisition parameters to automatically identify rare events in overview images. Ensure that only relevant data is generated and evaluated.

AI-powered analyses

Perform 2D image analyses with pre-trained AI models or enable machine learning algorithms to segment images—without any programming effort.

ZEISS Axio Observer *scan* and ZEISS Axio Imager *scan*

The Bundle Components

Microscope

- Axio Observer 7 (inverted)
- Axio Imager 2 (upright)
- Scanning stage 130 × 100
- Mot. Condenser NA 0.55[1] / NA 0.9[2]
- AI Sample Finder[1]
- Definite Focus 3[1]
- Apotome 3[2]
- Autoimmersion Module[1]

Depending on your application needs, you can either choose an inverted configuration based on ZEISS Axio Observer 7 (left) or an upright configuration based on ZEISS Axio Imager 2.

Light source / camera

- Viluma 7
- Filter sets 38, 43, 50, 64, 70[2], 96, 112[1]
- Axiocam 820 mono[1] / 305 color[2]

Objectives

- EC Plan-Neofluar 5×/0.16
- Plan-Apochromat 10×/0.45, 20×/0.8
- LD LCI PApo 40×/1.2 Imm Corr DIC[1]
- LD LCI PApo 40×/0.95 Corr[2]

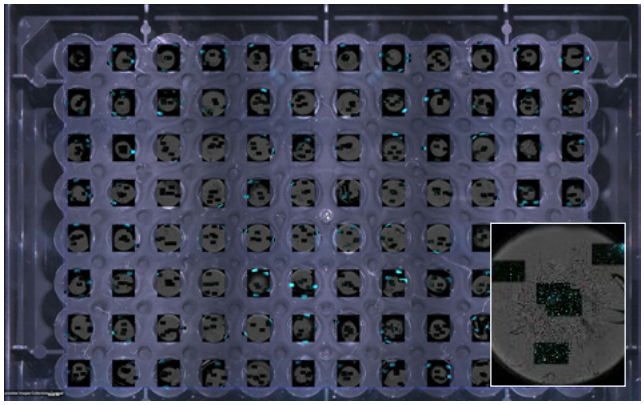
Workstation

- Z8 Workstation with 128 GB RAM and nVidia Quadro RTX A4000 16 GB DP

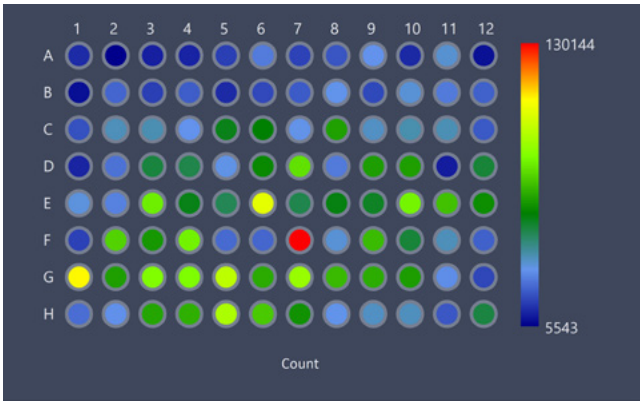
ZEN software packages

- ZEN Toolkit Motorized Acquisition: Acquire images and control motorized components in multi-dimensional experiments.
- ZEN Toolkit Smart Acquisition: Create flexible and intelligent image acquisitions workflows with the Experiment Designer, Guided Acquisition and Experiment Feedback tools.
- ZEN Toolkit 2D: Create flexible automatic measurement programs for the analysis of your 2D images.
- ZEN Toolkit AI: Make use of powerful AI tools. With this package, you can train AI models for various applications.

[1]Axio Observer 7, [2]Axio Imager 2



Overview image of a 96-well plate showing the exact position of the obtained transmitted light and fluorescence images.



Heatmap of the cell count evaluation of a 96-well plate allows you to quickly identify wells containing high and low number of cells.

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